

# 1.10 part III Homework

In Exercises 65–72, find

- a.  $(f \circ g)(x)$ ;      b. the domain of  $f \circ g$ .

65.  $f(x) = \frac{2}{x+3}, g(x) = \frac{1}{x}$

66.  $f(x) = \frac{5}{x+4}, g(x) = \frac{1}{x}$

67.  $f(x) = \frac{x}{x+1}, g(x) = \frac{4}{x}$

68.  $f(x) = \frac{x}{x+5}, g(x) = \frac{6}{x}$

69.  $f(x) = \sqrt{x}, g(x) = x - 2$

70.  $f(x) = \sqrt{x}, g(x) = x - 3$

71.  $f(x) = x^2 + 4, g(x) = \sqrt{1-x}$

72.  $f(x) = x^2 + 1, g(x) = \sqrt{2-x}$

In Exercises 73–80, express the given function  $h$  as a composition of two functions  $f$  and  $g$  so that  $h(x) = (f \circ g)(x)$ .

73.  $h(x) = (3x - 1)^4$       74.  $h(x) = (2x - 5)^3$

75.  $h(x) = \sqrt[3]{x^2 - 9}$       76.  $h(x) = \sqrt{5x^2 + 3}$

77.  $h(x) = |2x - 5|$       78.  $h(x) = |3x - 4|$

79.  $h(x) = \frac{1}{2x - 3}$       80.  $h(x) = \frac{1}{4x + 5}$

97. A company that sells radios has yearly fixed costs of \$600,000. It costs the company \$45 to produce each radio. Each radio will sell for \$65. The company's costs and revenue are modeled by the following functions, where  $x$  represents the number of radios produced and sold:

$C(x) = 600,000 + 45x$  This function models the company's costs.

$R(x) = 65x$  This function models the company's revenue.

Find and interpret  $(R - C)(20,000)$ ,  $(R - C)(30,000)$ , and  $(R - C)(40,000)$ .

99. The regular price of a computer is  $x$  dollars. Let  $f(x) = x - 400$  and  $g(x) = 0.75x$ .

- Describe what the functions  $f$  and  $g$  model in terms of the price of the computer.
- Find  $(f \circ g)(x)$  and describe what this models in terms of the price of the computer.
- Repeat part (b) for  $(g \circ f)(x)$ .
- Which composite function models the greater discount on the computer,  $f \circ g$  or  $g \circ f$ ? Explain.